

**IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK**

CARNEGIE INSTITUTION OF
WASHINGTON,

M7D CORPORATION,

Plaintiffs,

v.

FENIX DIAMONDS LLC,

Defendant.

Civil Action No. 1:20-cv-0200 (JSR)

Honorable Jed S. Rakoff

**DEFENDANT FENIX DIAMONDS
LLC’S ANSWERS, DEFENSES, AND
COUNTERCLAIMS**

FENIX DIAMONDS LLC,

Counterclaim-Plaintiff.

v.

CARNEGIE INSTITUTION OF
WASHINGTON,

M7D CORPORATION,

Counterclaim-Defendants.

Defendant Fenix Diamonds LLC (“Fenix”), by and through its undersigned attorneys, hereby answers each of the numbered paragraphs in the Amended Complaint, Dkt. 16 (“the Amended Complaint”), filed on March 5, 2020 by Plaintiffs Carnegie Institution of Washington (“Carnegie”) and M7D Corporation (“M7D”). Except where explicitly admitted below, Fenix denies each allegation made in the Complaint.

THE PARTIES

Plaintiffs—Carnegie Institution of Washington and M7D Corp.

1. Fenix lacks knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 1 and therefore denies them.

2. Fenix lacks knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 2 and therefore denies them.

3. Fenix lacks knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 3 and therefore denies them.

4. Denied.

5. Denied.

6. Fenix lacks knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 6 and therefore denies them.

7. Fenix lacks knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 7 and therefore denies them.

Defendant—Fenix Diamonds LLC

8. Fenix admits that fenixdiamonds.com/about contained the passage quoted in Paragraph 8.

9. Fenix denies manufacturing diamonds and therefore denies the allegations in Paragraph 9.

10. Fenix admits that fenixdiamonds.com/about contains the copied image of a generic diamond manufacturing pipeline. Fenix denies manufacturing diamonds and jewelry containing diamonds. Fenix denies that the manufacturing pipeline for producing the diamonds Fenix

distributes conforms to the details shown in the image of the generic diamond manufacturing pipeline. Fenix denies all remaining allegations in Paragraph 10.

11. Denied.

12. Denied.

13. Fenix admits that it distributes diamonds obtained through a transparent supply pipeline. Fenix denies all remaining allegations in Paragraph 13.

14. Fenix admits that its customers include wholesalers, distributors, and other third-parties. Fenix admits that it offers marketing and brand support for its customers. To the extent Paragraph 14 includes additional allegations, Fenix denies them.

15. Admitted.

16. Fenix denies that it is a corporation. Fenix otherwise admits Paragraph 16.

17. Fenix admits that its headquarters is at the address identified in Paragraph 17.

18. Denied.

19. Denied.

20. Denied.

JURISDICTION AND VENUE

21. Fenix incorporates and realleges its Answers to Paragraphs 1–20.

22. Fenix admits that this action purports to state a claim under the patent laws of the United States. Fenix denies that patent infringement has occurred, that Plaintiffs are entitled to any relief, and that Plaintiffs have or ever did have a reasonable basis to initiate the present lawsuit. The remainder of Paragraph 22 contains legal conclusions to which no answer is required.

23. Denied.

24. To the extent this Paragraph contains legal conclusions, no answer is required. For purposes of this action, Fenix does not dispute that this Court may exercise personal jurisdiction over it.

25. To the extent this Paragraph contains legal conclusions, no answer is required. For purposes of this action, Fenix does not dispute that this Court may exercise personal jurisdiction over it.

26. To the extent this Paragraph contains legal conclusions, no answer is required. For purposes of this action, Fenix does not dispute that this Court may exercise personal jurisdiction over it. Fenix denies the remaining allegations of Paragraph 26.

27. Fenix admits that Fenix's promotional materials have been directed toward parties in New York State and this Judicial District. Fenix denies the remaining allegations of Paragraph 27.

28. Denied.

29. Fenix admits that it sells to, and accepts purchases from, New York State customers. Fenix denies the remaining allegations of Paragraph 29.

30. For purposes of this action, Fenix does not dispute that this Court may exercise personal jurisdiction over it. Fenix otherwise denies Paragraph 30.

31. This paragraph contains legal conclusions to which no answer is required. Fenix does not contest venue in this district for purposes of this action. Fenix otherwise denies Paragraph 31.

32. This paragraph contains legal conclusions to which no answer is required. Fenix does not contest venue in this district for purposes of this action. Fenix otherwise denies Paragraph 32.

THE PATENTS-IN-SUIT

33. Fenix admits that U.S. Patent No. 6,858,078 (“the ’078 Patent”) purports on its face to have issued on February 22, 2005 with the title “Apparatus and Method of Diamond Production.” Fenix denies that the ’078 Patent was duly and legally issued. Fenix admits that Exhibit A appears to be a copy of the ’078 Patent.

34. Admitted.

35. Fenix lacks knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 35 and therefore denies them.

36. Denied.

37. Fenix denies that the allegations in Paragraph 37 completely capture the subject matter of the ’078 patent. Fenix admits that the ’078 Patent requires that a particular temperature gradient must be maintained during diamond growth. Fenix denies the remaining allegations in Paragraph 37.

38. Fenix admits that the ’078 Patent appears to include sixty-four claims. Fenix denies the remaining allegations of Paragraph 38.

39. Fenix admits that U.S. Patent No. RE41,189 (“the ’189 Patent”) purports on its face to have issued on April 6, 2010 with the title “Method of Making Enhanced CVD Diamond.” Fenix denies that the ’189 Patent was duly and legally issued. Fenix admits that Exhibit B appears to be a copy of the ’189 Patent.

40. Fenix admits that the ’189 Patent appears to be a reissue of U.S. Patent No. 6,811,610 (“the ’610 Patent”). Fenix denies that the ’189 Patent is a valid reissue of the ’610 Patent. Fenix admits that the ’610 Patent on its face purports to have issued from Application No. 10/161,266 on November 2, 2004. Fenix denies that the ’610 Patent was legally issued.

41. Fenix lacks knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 41 and therefore denies them.

42. Denied.

43. Denied.

44. Denied.

45. Fenix admits that the '189 Patent purports to include seven claims. Fenix denies the remaining allegations of Paragraph 45.

[ALLEGED] BACKGROUND ON NATURAL AND LAB-GROWN DIAMONDS

46. Fenix admits that diamond is a solid form of carbon with the carbon atoms arranged in a crystal structure called diamond cubic. Fenix lacks knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 46 and therefore denies them.

47. Fenix admits that diamonds may be created under laboratory conditions. Fenix admits that lab-grown diamonds are chemically, physical, and optically identical to natural diamonds. Fenix lacks knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 47 and therefore denies them.

48. Admitted.

49. Fenix admits that multiple techniques exist for practicing chemical vapor deposition. Fenix lacks knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 49 and therefore denies them.

50. Fenix lacks knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 50 and therefore denies them.

FENIX'S CVD DIAMOND PRODUCTS

51. Fenix admits that it sells in, and imports lab-grown diamonds into, the United States. Fenix otherwise denies the allegations in Paragraph 51.

52. Admitted.

53. Fenix admits that the copied image in Paragraph 53 is a simplified graphic intended to demonstrate various stages of a diamond-growing process and that the diamonds imported and sold by Fenix are grown on a diamond seed. Fenix denies all remaining allegations of Paragraph 53.

54. Denied.

55. Denied.

56. Denied.

57. Fenix admits that the diamonds that it sells have been annealed. Fenix denies the remaining allegations of Paragraph 57.

58. Denied.

59. Admitted.

60. Admitted.

COUNT ONE: [ALLEGED] INFRINGEMENT OF THE '078 PATENT

61. Fenix incorporates and realleges Paragraphs 1–60 of this Answer.

62. Fenix admits that Plaintiffs have not licensed the '078 Patent to Fenix. Fenix denies that a license from Plaintiffs is required to conduct any of its activities. Fenix further denies that the '078 Patent contains any invention. Fenix denies the remaining allegations of Paragraph 62.

[Alleged] Direct Infringement

63. Denied.

64. Fenix admits that its website contains the passage quoted in sentence two of Paragraph 64. Fenix otherwise denies the allegations in Paragraph 64.

65. Fenix admits that claims 1 and 12 of the '078 Patent require maintaining the growth surface temperature gradient to less than 20°C. Fenix otherwise denies the allegations of Paragraph 65.

66. Fenix admits that claim 1 of the '078 Patent requires a pressure of at least 130 torr. Fenix otherwise denies the allegations of Paragraph 66.

67. Denied.

68. Denied.

69. Denied.

70. Denied.

71. Denied.

[Alleged] Induced Infringement

72. Denied.

73. Denied.

74. Denied.

75. Denied.

76. Denied.

77. Denied.

[Alleged] Willful Infringement

78. Denied.

79. Denied.

80. Denied.

81. Denied.

COUNT TWO: [ALLEGED] INFRINGEMENT OF THE '189 PATENT

82. Fenix incorporates and realleges Paragraphs 1–81 of this Answer.

83. Fenix admits that Plaintiffs have not licensed the '189 Patent to Fenix. Fenix denies that a license from Plaintiffs is required to conduct any of its activities. Fenix further denies that the '189 Patent contains any invention. Fenix otherwise denies the allegations in Paragraph 83.

[Alleged] Direct Infringement

84. Denied.

85. Denied.

86. Denied.

87. Fenix lacks knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 87 and therefore denies them.

88. Denied.

89. Denied.

90. Denied.

91. Denied.

92. Denied.

[Alleged] Induced Infringement

93. Denied.

94. Denied.

95. Denied.

96. Denied.

97. Denied.

98. Denied.

99. Denied.

[Alleged] Willful Infringement

100. Denied.

101. Denied.

102. Denied.

RESPONSE TO PRAYER FOR RELIEF

Fenix denies all allegations not specifically admitted herein and further denies that Plaintiffs are entitled to the judgement or relief that Plaintiffs request in the Amended Complaint. Fenix denies that Plaintiffs are entitled to any relief whatsoever. Rather, Fenix denies infringing the '078 and '189 Patents, denies that the claims of such patents Plaintiffs have asserted against Fenix are valid, and denies that such patents are enforceable. Fenix contends that the Amended Complaint should be dismissed with prejudice and with a finding that Fenix does not infringe the '078 and '189 Patents, that the claims of such patents asserted against Fenix are invalid, and that such patents are unenforceable.

AFFIRMATIVE DEFENSES

Without any admission as to the burden of proof, burden of persuasion, or the truth of any allegation in the Amended Complaint, Fenix states the following affirmative defenses. Fenix reserves the right to modify its defenses and to raise additional defenses as discovery proceeds.

FIRST AFFIRMATIVE DEFENSE

(Non-Infringement)

Fenix has not infringed, and does not infringe, any claim of the '078 Patent or the '189 Patent (“the Asserted Patents”) literally, under the doctrine of equivalents, directly or indirectly, contributorily, by inducement, or in any other manner.

SECOND AFFIRMATIVE DEFENSE

(Invalidity)

The claims of the '078 Patent and of the '189 Patent that Plaintiffs have asserted against Fenix (claims 1, 6, 7, 11, 12, and 16 of the '078 Patent and claims 1 and 2 of the '189 Patent—collectively, “the Asserted Claims”) are invalid for failing to comply with the conditions and requirements for patentability set forth in the United States Patent Laws, including, without limitation, in 35 U.S.C. §§ 101, 102, 103, 111, 112, 116, 132, and 251, and the rules, regulations, and laws pertaining thereto.

The Asserted Claims are invalid for the reasons set forth in Fenix Diamonds LLC’s Preliminary Invalidity Contentions Under Local Patent Rule 7 (“Preliminary Invalidity Contentions”) served on March 20, 2020, which include the following invalidity grounds, and for other invalidity grounds that will be provided as this action progresses.

- a. U.S. Patent No. 5,628,824 to Vohra et al. (“Vohra”) invalidates the Asserted Claims of the '078 Patent under at least 35 U.S.C. § 102.
- b. Vohra in view of U.S. Patent No. 5,449,412 to Pinneo (“Pinneo”) invalidates the Asserted Claims of the '078 Patent under at least 35 U.S.C. § 103.
- c. The Asserted Claims of the '078 Patent are not enabled and thus invalid under 35 U.S.C. § 112 because the temperature sensing equipment described in the '078 Patent is incapable

of providing temperature measurements necessary to maintain a sub-20°C growth surface gradient. One of ordinary skill in the art would not be able to practice the purported invention in the Asserted Claims without undue experimentation.

d. Upon information and belief, Plaintiffs discovered that significant experimentation beyond the technical details described in the '078 Patent and generally known in the art at the time of purported invention would be required to develop a temperature sensor with the requisite accuracy.

e. The Asserted Claims of the '078 Patent are not enabled and thus invalid under 35 U.S.C. § 112 because the equipment described in the '078 Patent is incapable maintaining a growth surface gradient at any value in the claimed range (i.e., 0–20°C), much less throughout the full scope of the claimed range (e.g., 0°C), even if it was possible to accurately measure all growth surface temperatures.

f. Upon information and belief, Plaintiffs discovered that significant experimentation beyond the technical details described in the '078 Patent and generally known in the art at the time of purported invention would be required to make equipment capable of maintaining a growth surface gradient at any point in the claimed range (i.e., 0–20°C), let alone throughout the full scope of the claimed range (e.g., 0°C), even if it was possible to accurately measure all growth surface temperatures.

g. The Asserted Claims of the '078 Patent are not patent eligible and thus invalid under 35 U.S.C. § 101. The Asserted Claims of the '078 Patent merely apply equipment that existed before the date of purported invention to monopolize the well-known natural principle that uniform diamond growth requires uniform growth surface temperatures.

h. For example, upon information and belief, Plaintiffs have represented that it is impossible to grow diamonds through microwave plasma chemical vapor deposition without infringing the '078 Patent, thus evidencing Plaintiffs' intent to monopolize this natural principle.

i. European Patent Application No. 0 671 82 to Anthony et al. ("Anthony") invalidates the Asserted Claims of the '189 Patent under at least 35 U.S.C. § 102.

j. U.S. Patent No. 4,124,690 to Strong et al. ("Strong") invalidates the Asserted Claims of the '189 Patent under at least 35 U.S.C. § 103.

k. The Asserted Claims of the '189 Patent are not enabled and thus invalid under 35 U.S.C. § 112 because the equipment described in the '189 Patent is incapable of applying temperatures and pressures throughout the full scope of the claimed range.

l. Upon information and belief, Plaintiffs discovered that significant experimentation above the technical details described in the '189 Patent and generally known in the art at the time of purported invention would be required to make equipment capable of applying temperatures and pressures throughout the full scope of the claimed range.

m. Upon information and belief, Plaintiffs discovered that significant experimentation above the technical details described in the '189 Patent and generally known in the art at the time of purported invention would be required to accurately determine the diamond-to-graphite transition line that separates the graphite stable region from the diamond stable region.

n. The Asserted Claims of the '189 Patent are not patent eligible and thus invalid under 35 U.S.C. § 101. The Asserted Claims of the '189 Patent merely apply equipment that existed before the date of purported invention to monopolize the well-known natural principle that high pressures and temperatures improve diamond quality.

THIRD AFFIRMATIVE DEFENSE

(No Willfulness)

Fenix has not intentionally, willfully, or deliberately infringed any Asserted Patent.

FOURTH AFFIRMATIVE DEFENSE

(No Pre-Suit Damages)

Plaintiffs are precluded from seeking recovery for alleged infringement that occurred pre-suit under 35 U.S.C. § 287. There was no pre-suit notice of purported infringement of the Asserted Patents under, *e.g.*, 35 U.S.C. § 287(b)(2) and (b)(5), and, at all times, Fenix has acted in good faith consistent with, *e.g.*, 35 U.S.C. § 287(b).

FIFTH AFFIRMATIVE DEFENSE

(Inequitable Conduct)

The '189 Patent is unenforceable because U.S. Patent No. 6,811,610 ("the '610 Patent"), from which the '189 Patent reissued, was obtained by inequitable conduct attributable to Robert H. Frushour, Wei Li, and/or Phoenix Crystal Corporation.

a. On June 3, 2002, Frushour and Li filed U.S. Patent Application No. 10/161,266 ("the '266 Application"), which listed Frushour and Li as joint inventors. Frushour and Li assigned the '266 Application to Phoenix Crystal Corporation, of which Frushour was CEO and Li an employee. Their signed oaths of inventorship state as follows: "I believe I am . . . an original, first and joint inventor . . . of the subject matter which is claimed and for which a patent is sought on the invention entitled: METHOD OF MAKING ENHANCED CVD DIAMOND." On April 15, 2004, the '266 Application was eventually allowed and it issued as the '610 Patent.

b. On July 13, 2004, Russel J. Hemley, Ho-Kwang Mao, and Chih-shiue Yan ("the '171 applicants") filed U.S. Patent Application No. 10,889,171 ("the '171 Application"), which

listed Hemley, Mao, and Yan as joint inventors. Hemley, Mao, and Yan assigned the '171 Application to Carnegie Institution of Washington, effective July 12, 2004. Their oaths of inventorship state as follows: "I believe I am . . . an original, first and joint inventor . . . of the subject matter which is claimed and for which a patent is sought on the invention entitled: ANNEALING SINGLE CRYSTAL CHEMICAL VAPOR DEPOSITION DIAMONDS."

c. Along with the '171 Application, Hemley, Mao, and Yan included a request for an interference proceeding with the '266 Application, accompanied by a declaration signed by the '171 Applicants. The same request and declaration were made part of the file for the '266 Application on August 30, 2004.

d. On November 2, 2004, the USPTO issued the '266 Application as the '610 Patent. On November 22, 2006, the USPTO denied the '171 Applicants' request for an interference proceeding. On August 15, 2007, the '171 Application was abandoned by Carnegie.

e. The claims of the '171 Application were identical to the claims of the '266 Application, the '610 Patent, and the '189 Patent.

f. According to the declaration submitted by the '171 Applicants, Li and Frushour intentionally concealed the true inventorship of the '266 Application from the USPTO. This information was material to patentability because, but for the concealment of true inventorship, the USPTO would not have issued the '610 Patent in view of 35 U.S.C. § 102(f) (2000). This inequitable conduct taints not just the '610 Patent, but the '189 Patent, as inequitable conduct cannot be cured by reissue.

The '189 Patent is further unenforceable because due to inequitable conduct attributable to one or more of Carnegie, Carnegie's counsel, Wei Li, Russel J. Hemley, Ho-Kwang Mao, and/or Chih-shiue Yan during the reissue proceedings.

g. One or more of Carnegie, Carnegie's attorneys, Li, Hemley, Mao, and/or Yan knew that the true purpose of the reissue proceeding was to cure errors made with deceptive intent, but failed to so inform the Patent Office during the reissue proceeding.

h. Under pre-AIA 35 U.S.C § 251, a reissue is lawful only if the reissue corrected an error made without any deceptive intention. Therefore, the failure to inform the Patent Office of the true purpose of the reissue proceeding was material to patentability.

i. Upon information and belief, one or more of Carnegie, Carnegie's attorneys, Li, Hemley, Mao, and/or Yan omitted material information relating to the inventorship of the claimed subject matter with specific intent to deceive the Patent Office.

SIXTH AFFIRMATIVE DEFENSE

(Invalid Reissue)

Under pre-AIA 35 U.S.C § 251, reissue of the '189 Patent was only lawful if it corrected an error made without any deceptive intention. On information and belief, Frushour, Li, and Phoenix Crystal Corporation purposefully excluded Hemley, Mao, and Yan Applicants as co-inventors of the '266 Application and purposefully named themselves as the sole inventors of the '266 Application. Deliberate actions taken during prosecution, such as those taken by Frushour, Li, and Pheonix Crystal Corporation during prosecution of the '610 Patent, are not errors made without any deceptive intention under pre-AIA § 251. The '189 Patent therefore reissued contrary to pre-AIA § 251 and is invalid.

SEVENTH AFFIRMATIVE DEFENSE

(No Standing)

After the change in inventorship effected by the issuance of the '189 Patent, Hemley, Mao, and Yan were each made a joint owner of the '189 Patent. Because no documents are recorded

with the USPTO reflecting that Hemley, Mao, or Yan assigned their rights in the '189 Patent to Carnegie, on information and belief, Plaintiffs lack standing to sue for infringement of the '189 Patent. Additionally, the '171 Application was published on February 3, 2005, as U.S. Patent Application Publication No. 2005/0025886. Paragraph [0002] of that document states "This invention was made with U.S. government support under grant number EAR-0135626 from the National Science Foundation. The U.S. government has certain rights in the invention." The '189 Patent lacks any such statement. On information and belief, Carnegie failed to notify the federal government that it has rights in the '189 Patent within the time allotted under 35 U.S.C. § 202(c)(2), giving the federal government no notice or opportunity to exercise its rights in the '189 Patent. In addition, on information and belief, M7D Corporation has not established that it has standing to enforce either of the asserted patents. M7D Corporation has not alleged that it is an exclusive licensee or owner of either asserted patent and a non-exclusive licensee of a patent has no standing to sue for infringement.

OTHER DEFENSES

Fenix's investigation of its defenses is continuing, Fenix expressly reserves its rights to allege and assert any additional affirmative defenses under Rule 8 of the Federal Rules of Civil Procedure, the patent laws of the United States, and any other defense, at law or in equity, that may now exist or in the future be available based upon discovery and further investigation in this case.

COUNTERCLAIMS

For its Counterclaims against Plaintiffs/Counterclaim-Defendants Carnegie Institution of Washington and M7D Corporation (collectively, "Counterclaim-Defendants"), Defendant and Counterclaim-Plaintiff Fenix Diamonds LLC ("Fenix") states as follows:

1. The admissions, allegations, denials, and Affirmative Defenses contained in the Answer above are realleged and incorporated by reference as if fully set forth herein.

PARTIES

2. Fenix realleges and incorporates by reference Paragraph 1 of its Counterclaims as if fully set forth herein.

3. Fenix is a New York Domestic Limited Liability Company with a headquarters at 592 Fifth Avenue, #1103, New York, New York 10036.

4. According to the Amended Complaint, Carnegie is a Washington D.C. corporation with its headquarters and principal place of business at 1530 P St. NW, Washington, D.C. 20005.

5. According to the Amended Complaint, M7D is a Delaware corporation with its headquarters and principal place of business at 6700 Virginia Manor Road, Beltsville, M.D. 20705.

JURISDICTION AND VENUE

6. Fenix realleges and incorporates by reference Paragraphs 1–5 of its Counterclaims as if fully set forth herein.

7. These Counterclaims arise under the Federal Declaratory Judgment Act and the Patent Laws of the United States, 28 U.S.C. §§ 2291 and 2202 and 35 U.S.C. § 100 *et seq.* The Court has subject matter jurisdiction over Fenix’s counterclaims under 38 U.S.C. §§ 1331, 1367, and 1338(a) because the Counterclaims are so related to the claims in this action as to form part of the same case or controversy under Article III of the United States Constitution.

8. This Court has personal jurisdiction over Carnegie and M7D because, among other things, these Counterclaim-Defendants have consented and subjected themselves to the jurisdiction of this Court by filing their Complaint and Amended Complaint against Fenix.

9. On January 9, 2020, Plaintiffs filed their original Complaint, Dkt. 1, in the Southern District of New York. On March 5, 2020, Plaintiffs filed their Amended Complaint, Dkt. 16, in the Southern District of New York. Both complaints allege infringement of U.S. Patents No. 6,858,078 (“the ’078 Patent”) and U.S. Patent No. RE41,189 (“the ’189 Patent”) (collectively, “the Asserted Patents”).

10. On March 11, 2020, Plaintiffs filed their Local Patent Rule 6 Disclosure to Defendant Fenix Diamonds LLC alleging infringement of claims 1, 6, 7, 11, 12, and 16 of the ’078 Patent and claims 1 and 2 of the ’189 Patent (collectively, “the Asserted Claims”).

11. Fenix denies infringing the Asserted Patents.

12. Fenix denies that the Asserted Claims are valid.

13. Fenix denies that the Asserted Patents are enforceable.

14. Therefore, an actual and justiciable controversy between the parties as to infringement and enforceability of the Asserted Patents and as to the validity of the Asserted Claims.

15. This Court has personal jurisdiction over Plaintiffs by virtue of their filing of this case in the Southern District of New York.

16. To the extent venue in this Court is proper for the claims set out in Plaintiffs’ Amended Complaint, venue is proper for Fenix’s counterclaims.

FIRST COUNTERCLAIM

(Declaration of Non-Infringement of the ’189 Patent)

17. Fenix realleges and incorporates by reference Paragraphs 1–16 of its Counterclaims as if fully set forth herein.

18. A present, genuine, and justiciable controversy exists between Fenix and Counterclaim-Defendants regarding, inter alia, the issue of whether Fenix infringes or would infringe any valid or enforceable claim of the '189 Patent.

19. The manufacture, use, offer for sale, or sale of any diamonds sold by Fenix does not infringe, and has never infringed, any valid and enforceable claim of the '189 Patent directly, contributorily or by inducement, literally or by equivalents.

20. Fenix is entitled to a judicial determination and declaration that it does not infringe any valid, non-abandoned, and enforceable claim of the '189 Patent.

SECOND COUNTERCLAIM

(Declaration of Non-Infringement of the '078 Patent)

21. Fenix realleges and incorporates by reference Paragraphs 1–20 of its Counterclaims as if fully set forth herein.

22. A present, genuine, and justiciable controversy exists between Fenix and Counterclaim-Defendants regarding, inter alia, the issue of whether Fenix infringes or would infringe any valid or enforceable claim of the '078 Patent.

23. The manufacture, use, offer for sale, or sale of any diamonds sold by Fenix does not infringe, and has never infringed, any valid and enforceable claim of the '078 Patent directly, contributorily or by inducement, literally or by equivalents.

24. Fenix is entitled to a judicial determination and declaration that it does not infringe any valid, non-abandoned and enforceable claim of the '078 Patent.

THIRD COUNTERCLAIM

(Declaration of Invalidity of the '189 Patent)

25. Fenix realleges and incorporates by reference Paragraphs 1–24 of its Counterclaims as if fully set forth herein.

26. A present, genuine, and justiciable controversy exists between Fenix and Counterclaim-Defendants regarding, inter alia, the invalidity of the '189 Patent.

27. The Asserted Claims of the '189 Patent are invalid, in whole or in part, for failure to satisfy one or more of the requirements of 35 U.S.C. §§ 101, 102, 103, 111, 112, 116, 132, and 251.

28. The Asserted Claims of the '180 Patent are invalid for the reasons set forth in Fenix Diamonds LLC's Preliminary Invalidity Contentions Under Local Patent Rule 7 ("Preliminary Invalidity Contentions") served on March 20, 2020, which include the following invalidity grounds, and for other invalidity grounds that will be provided as this action progresses.

29. European Patent Application No. 0 671 82 to Anthony et al. ("Anthony") invalidates the Asserted Claims of the '189 Patent under at least 35 U.S.C. § 102.

30. U.S. Patent No. 4,124,690 to Strong et al. ("Strong") invalidates the Asserted Claims of the '189 Patent under at least 35 U.S.C. § 103.

31. The Asserted Claims of the '189 Patent are not enabled and thus invalid under at least 35 U.S.C. § 112 because the equipment described in the '189 Patent is incapable of applying temperatures and pressures throughout the full scope of the claimed range.

32. Upon information and belief, Plaintiffs discovered that significant experimentation above the technical details described in the '189 Patent and generally known in the art at the time

of purported invention would be required to make equipment capable of applying temperatures and pressures throughout the full scope of the claimed range.

33. Upon information and belief, Plaintiffs discovered that significant experimentation above the technical details described in the '189 Patent and generally known in the art at the time of purported invention would be required to accurately determine the diamond-to-graphite transition line that separates the graphite stable region from the diamond stable region.

34. The Asserted Claims of the '189 Patent are not patent eligible and thus invalid under 35 U.S.C. § 101. The Asserted Claims of the '189 Patent merely apply equipment that existed before the date of purported invention to monopolize the well-known natural principle that high pressures and temperatures improve diamond quality.

35. The '189 Patent is invalid for being an improper reissue under pre-AIA 35 U.S.C. § 251.

36. Under pre-AIA 35 U.S.C § 251, reissue of the '189 Patent was only possible if it corrected an error made without any deceptive intention. On information and belief, Frushour, Li, and Phoenix Crystal Corporation purposefully excluded Hemley, Mao, and Yan Applicants as co-inventors of the '266 Application, and purposefully named themselves as the sole inventors of the '266 Application. Deliberate actions taken during prosecution, such as those taken by Frushour, Li, and Pheonix Crystal Corporation during prosecution of the '610 Patent, are not errors made without any deceptive intention under pre-AIA § 251. The '189 Patent therefore reissued contrary to pre-AIA § 251 and is invalid.

37. Accordingly, Fenix is entitled to a declaratory judgment that the Asserted Claims of the '189 Patent are invalid.

FOURTH COUNTERCLAIM

(Declaration of Invalidity of the '078 Patent)

38. Fenix realleges and incorporates by reference Paragraphs 1–37 of its Counterclaims as if fully set forth herein.

39. A present, genuine, and justiciable controversy exists between Fenix and Counterclaim-Defendants regarding, inter alia, the invalidity of the '078 Patent.

40. The claims of the '078 Patent are invalid, in whole or in part, for failure to satisfy one or more of the requirements of 35 U.S.C. §§ 101, 102, 103, 111, 112, 116, 132, and 251.

41. The Asserted Claims of the '078 Patent are invalid for the reasons set forth in Fenix's Preliminary Invalidity Contentions on March 20, 2020, which include the following invalidity grounds, and for other invalidity grounds that will be provided as this action progresses.

42. U.S. Patent No. 5,628,824 to Vohra et al. ("Vohra") invalidates the Asserted Claims of the '078 Patent under at least 35 U.S.C. § 102.

43. Vohra in view of U.S. Patent No. 5,449,412 to Pinneo ("Pinneo") invalidates the Asserted Claims of the '078 Patent under at least 35 U.S.C. § 103.

44. The Asserted Claims of the '078 Patent are not enabled and thus invalid under 35 U.S.C. § 112 because the temperature sensing equipment described in the '078 Patent is incapable of providing temperature measurements necessary to maintain a sub-20°C growth surface gradient. One of ordinary skill in the art would not be able to practice the purported invention in the Asserted Claims without undue experimentation.

45. Upon information and belief, Plaintiffs discovered that significant experimentation beyond the technical details described in the '078 Patent and generally known in the art at the time

of purported invention would be required to develop a temperature sensor with the requisite accuracy.

46. The Asserted Claims of the '078 Patent are not enabled and thus invalid under 35 U.S.C. § 112 because the equipment described in the '078 Patent is incapable maintaining a growth surface gradient at any value in the claimed range (i.e., 0–20°C), let alone throughout the full scope of the claimed range (e.g., 0°C), even if it was possible to accurately measure all growth surface temperatures.

47. Upon information and belief, Plaintiffs discovered that significant experimentation beyond the technical details described in the '078 Patent and generally known in the art at the time of purported invention would be required to make equipment capable of maintaining a growth surface gradient at any point in the claimed range (i.e., 0–20°C), let alone throughout the full scope of the claimed range (e.g., 0°C), even if it was possible to accurately measure all growth surface temperatures.

48. The Asserted Claims of the '078 Patent are not patent eligible and thus invalid under 35 U.S.C. § 101. The Asserted Claims of the '078 Patent merely apply equipment that existed before the date of purported invention to monopolize the well-known natural principle that uniform diamond growth requires uniform growth surface temperatures.

49. For example, upon information and belief, Plaintiffs have represented that it is impossible to grow diamonds through microwave plasma chemical vapor deposition without infringing the '078 Patent, thus evidencing Plaintiffs' intent to monopolize this natural principle.

50. Accordingly, Fenix is entitled to a declaratory judgment that the Asserted Claims of the '078 Patent are invalid.

FIFTH COUNTERCLAIM

(Declaratory Judgment of Unenforceability Due to Inequitable Conduct)

51. Fenix realleges and incorporates by reference Paragraphs 1–50 of its Counterclaims as if fully set forth herein.

52. The '189 Patent is unenforceable because U.S. Patent No. 6,811,610 (“the '610 Patent”), from which the '189 Patent reissued, was obtained by inequitable conduct attributable to Robert H. Frushour, Wei Li, and/or Phoenix Crystal Corporation.

53. On June 3, 2002, Frushour and Li filed U.S. Patent Application No. 10/161,266 (“the '266 Application”), which listed Frushour and Li as joint inventors. Frushour and Li assigned the '266 Application to Phoenix Crystal Corporation, of which Frushour was CEO and Li an employee. Their signed oaths of inventorship state as follows: “I believe I am . . . an original, first and joint inventor . . . of the subject matter which is claimed and for which a patent is sought on the invention entitled: METHOD OF MAKING ENHANCED CVD DIAMOND.” On April 15, 2004, the '266 Application was eventually allowed, and it issued as the '610 Patent.

54. On July 13, 2004, Russel J. Hemley, Ho-Kwang Mao, and Chih-shiue Yan (“the '171 applicants”) filed U.S. Patent Application No. 10,889,171 (“the '171 Application”), which listed Hemley, Mao, and Yan as joint inventors. Hemley, Mao, and Yan assigned the '171 Application to Carnegie Institution of Washington, effective July 12, 2004. Their oaths of inventorship state as follows: “I believe I am . . . an original, first and joint inventor . . . of the subject matter which is claimed and for which a patent is sought on the invention entitled: ANNEALING SINGLE CRYSTAL CHEMICAL VAPOR DEPOSITION DIAMONDS.”

55. Along with the '171 Application, Hemley, Mao, and Yan included a request for an interference proceeding with the '266 Application, accompanied by a declaration signed by the

'171 Applicants. The same request and declaration were made part of the file for the '266 Application on August 30, 2004.

56. On November 2, 2004, the USPTO issued the '266 Application as the '610 Patent. On November 22, 2006, the USPTO denied the '171 Applicants' request for an interference proceeding. On August 15, 2007, the '171 Application was abandoned by Carnegie.

57. The claims of the '171 Application were identical to the claims of the '266 Application, the '610 Patent, and the '189 Patent.

58. According to the declaration submitted by the '171 Applicants, Li and Frushour intentionally concealed the true inventorship of the '266 Application from the USPTO. This information was material to patentability because, but for the concealment of true inventorship, the USPTO would not have issued the '610 Patent in view of 35 U.S.C. § 102(f) (2000). This inequitable conduct taints not just the '610 Patent, but the '189 Patent, as inequitable conduct cannot be cured by reissue.

59. The '189 Patent is further unenforceable because due to inequitable conduct attributable to one or more of Carnegie, Carnegie's counsel, Wei Li, Russel J. Hemley, Ho-Kwang Mao, and/or Chih-shiue Yan during the reissue proceedings.

60. One or more of Carnegie, Carnegie's attorneys, Li, Hemley, Mao, and/or Yan knew that the true purpose of the reissue proceeding was to cure errors made with deceptive intent, but failed to so inform the Patent Office during the reissue proceeding.

61. Under pre-AIA 35 U.S.C § 251, a reissue is lawful only if the reissue corrected an error made without any deceptive intention. Therefore, the failure to inform the Patent Office of the true purpose of the reissue proceeding was material to patentability.

62. Upon information and belief, one or more of Carnegie, Carnegie's attorneys, Li, Hemley, Mao, and/or Yan omitted material information relating to the inventorship of the claimed subject matter with specific intent to deceive the Patent Office.

EXCEPTIONAL CASE

Plaintiffs' conduct in this action renders it exceptional under 35 U.S.C. § 285. Fenix is entitled to recover its attorneys' fees and other expenses incurred in connection with the present action from Plaintiffs, jointly and severally.

PRAYER FOR RELIEF

WHEREFORE, Fenix prays that the Court enter judgment in its favor and against Counterclaim-Defendants as follows:

- a. Dismissing the Amended Complaint with prejudice and entering a judgment against Plaintiffs/Counterclaim-Defendants;
- b. Denying each request for relief made by Plaintiffs;
- c. Declaring that Fenix has not infringed, contributed to the infringement of, or induced others to infringe, either directly or indirectly, any valid claims of the '189 Patent and the '078 Patent.;
- d. Declaring that the claims of the '189 Patent and the '078 Patent are invalid and unenforceable;
- e. Declaring that this case is exceptional and awarding Fenix its attorneys' fees under 35 U.S.C. § 285;
- f. Awarding Fenix its costs and expenses incurred in connection with the present Action; and
- g. Awarding such other and further relief that the Court deems just and proper.

DEMAND FOR JURY TRIAL

Defendant and Counterclaim-Plaintiff Fenix Diamonds LLC demands trial by jury in this action.

Dated: May 18, 2020

Respectfully Submitted,

/s/ Maxwell B. Snow

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CERTIFICATE OF SERVICE

I hereby certify that on May 18, 2020, true and correct copies of the foregoing document were caused to be served on the following counsel of record via electronic mail:

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